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**United States Patent** [19]

Embree et al.

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Wyo.[21] Appl. No.: **09/287,484**[22] Filed: **Apr. 6, 1999**[51] Int. Cl.<sup>7</sup> ..... **A47L 9/24**[52] U.S. Cl. .... **15/347; 15/350; 15/351**[58] Field of Search ..... **15/347, 350, 351,**  
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*Primary Examiner*—Robert J. Warden, Sr.*Assistant Examiner*—Theresa T. Snider*Attorney, Agent, or Firm*—Dorsey & Whitney LLP[57] **ABSTRACT**

An apparatus and method for transporting a flow of air and particulates through a vacuum cleaner. In one embodiment, the apparatus includes an intake body having an intake opening configured to receive the flow of air into particulates. An airflow propulsion device is coupled to the intake opening to draw the flow through the intake opening and through a flow passage having an approximately constant flow area. The flow continues through one or more conduits from the propulsion device to a filter element housed in a filter housing where the particulates are separated from the flow of air.

**32 Claims, 7 Drawing Sheets**